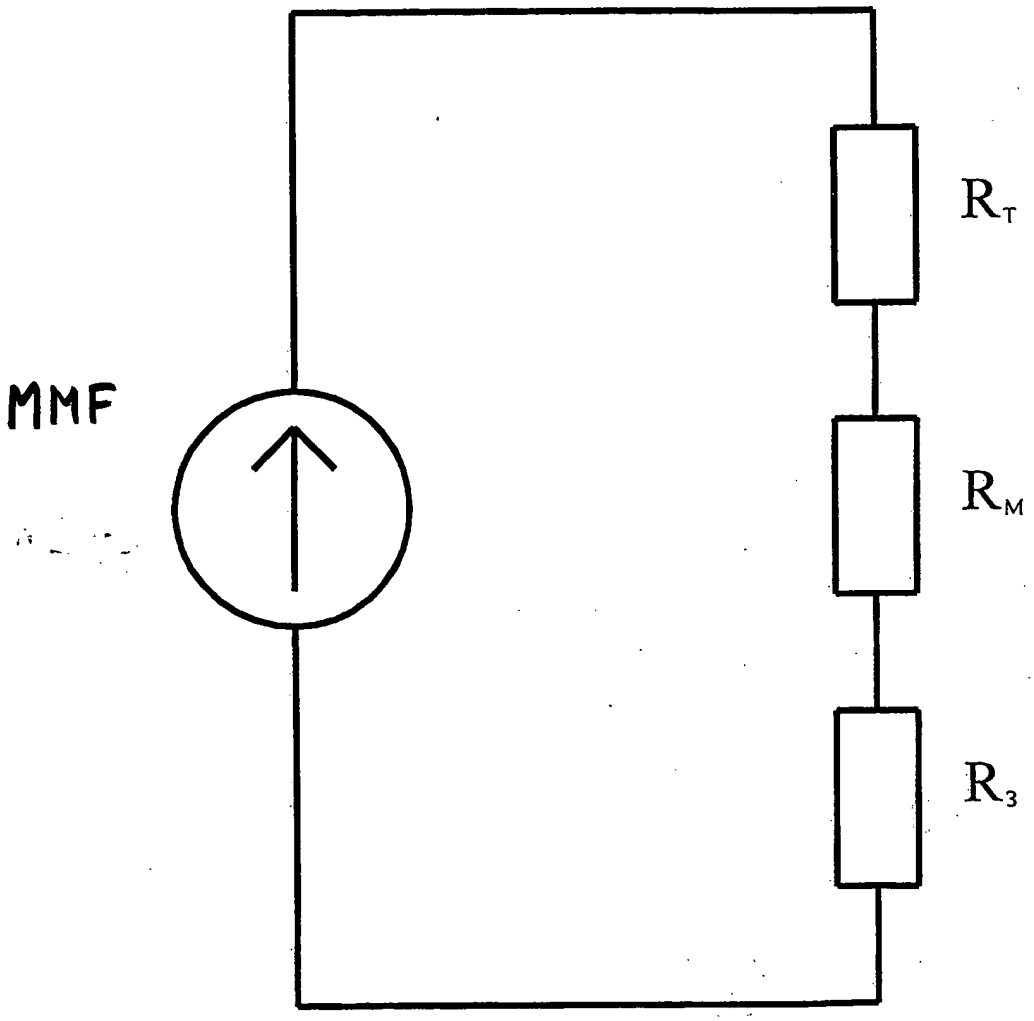

Fig.1

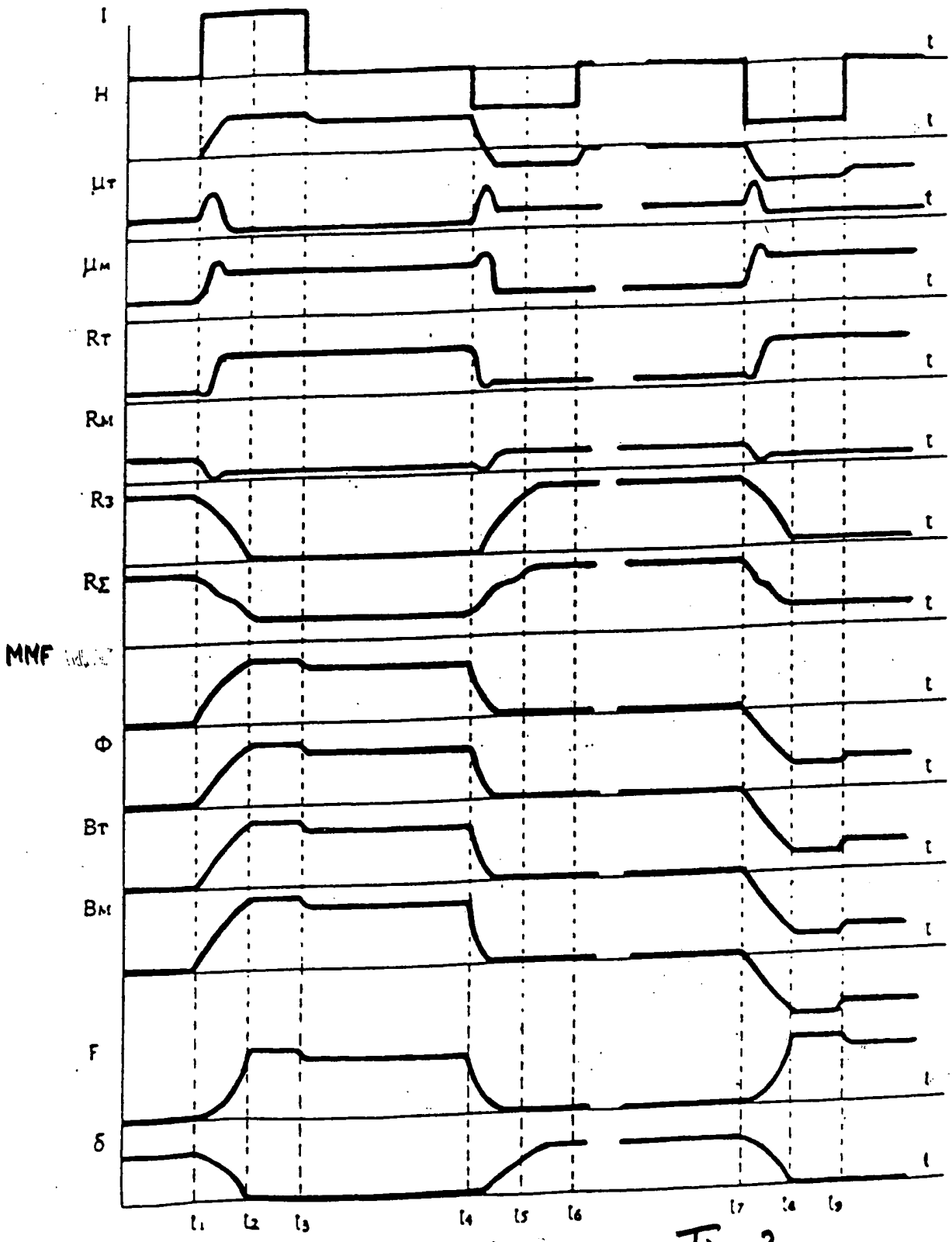

Fig. 2

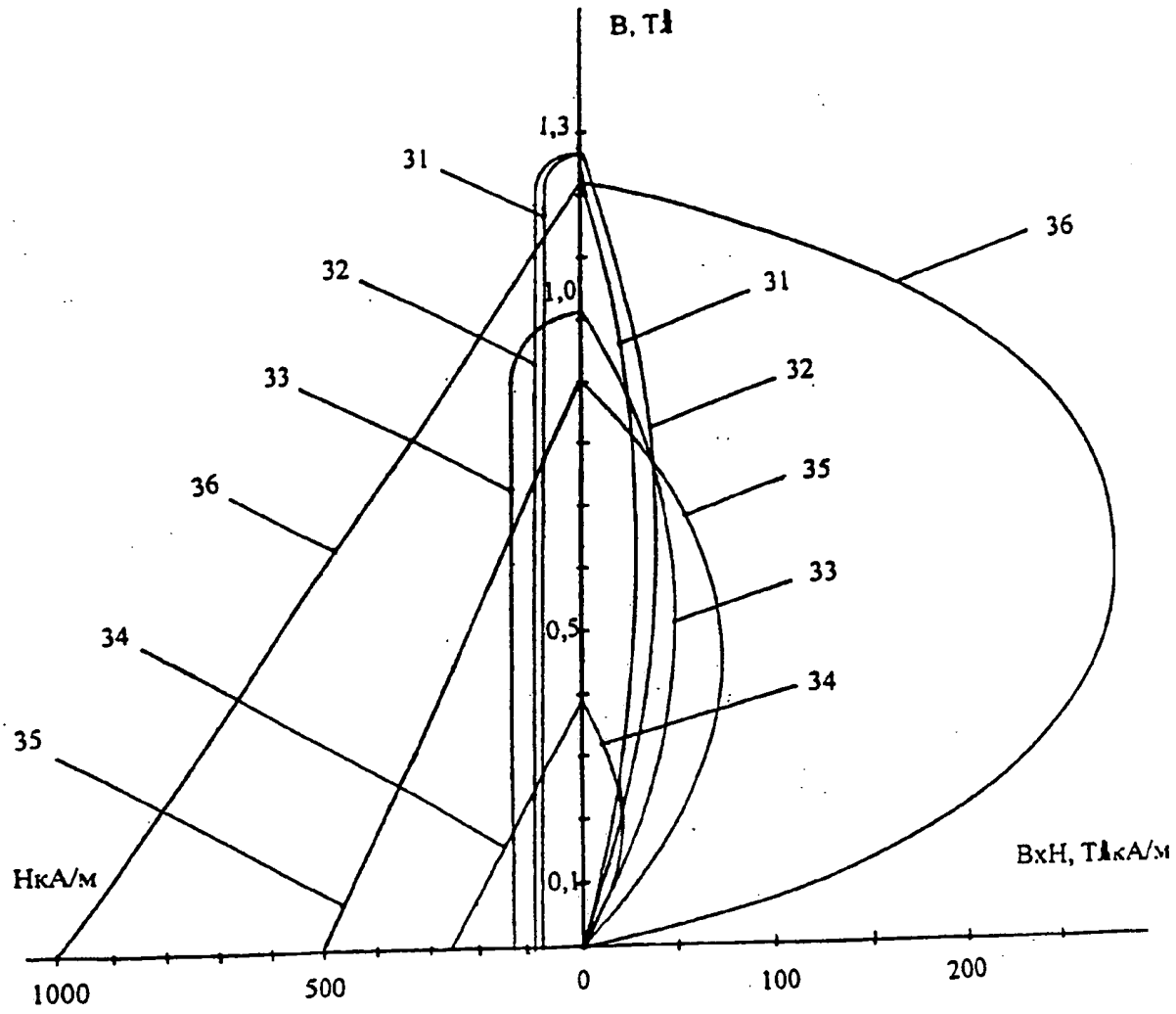
B, Тл
1,3
1,0
0,5
0,1
31
32
33
36
34
35
36
31
32
35
33
34
НкА/м
1000
500
0
100
200
ВхН, ТлкА/м

Fig. 3

Table 1

Ferromagnetics	Residual induction B, Tl	Coercitive force Hc, k A/m	Maximum induction Bmax at H=50 k A/m
Magnetically hard (4)			
UND8	0, 6	44	
UNDK15	0,75	48	
UNDK18C	1,10	44	1,0-1,5
UN13DK24	1,25	40	
UN13DK25	1,40	44	
UN14DK25	1,35	52	
Magnetically Soft (5)			
1211			2,2
1311			2,1
1411	<0,1	<0,5	2,1
1511			2,0

Figure 4

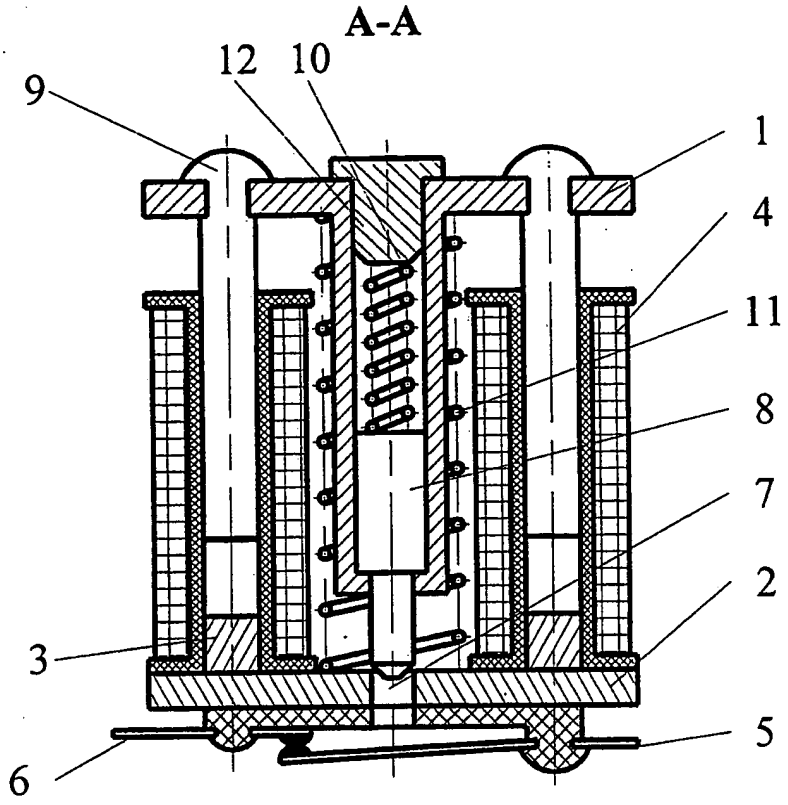

Fig. 5

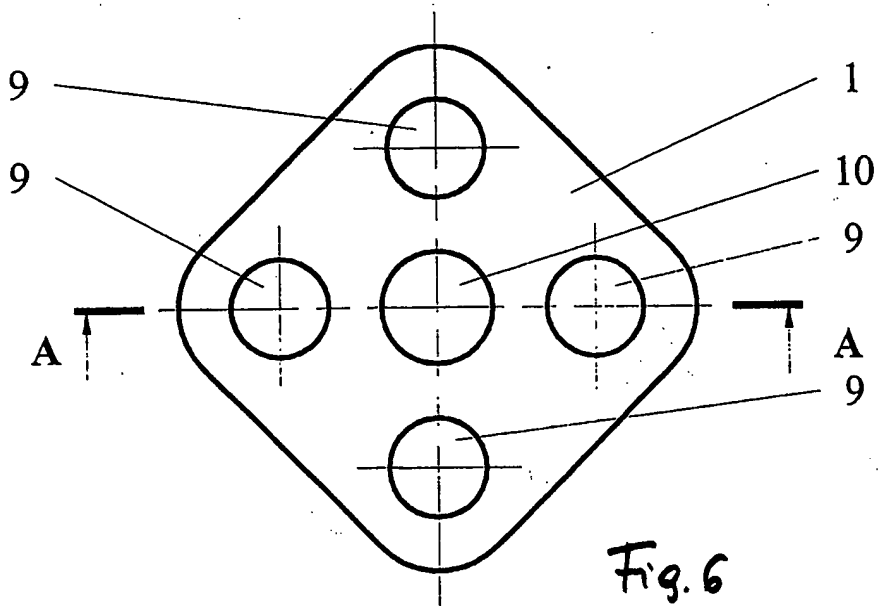

Fig. 6

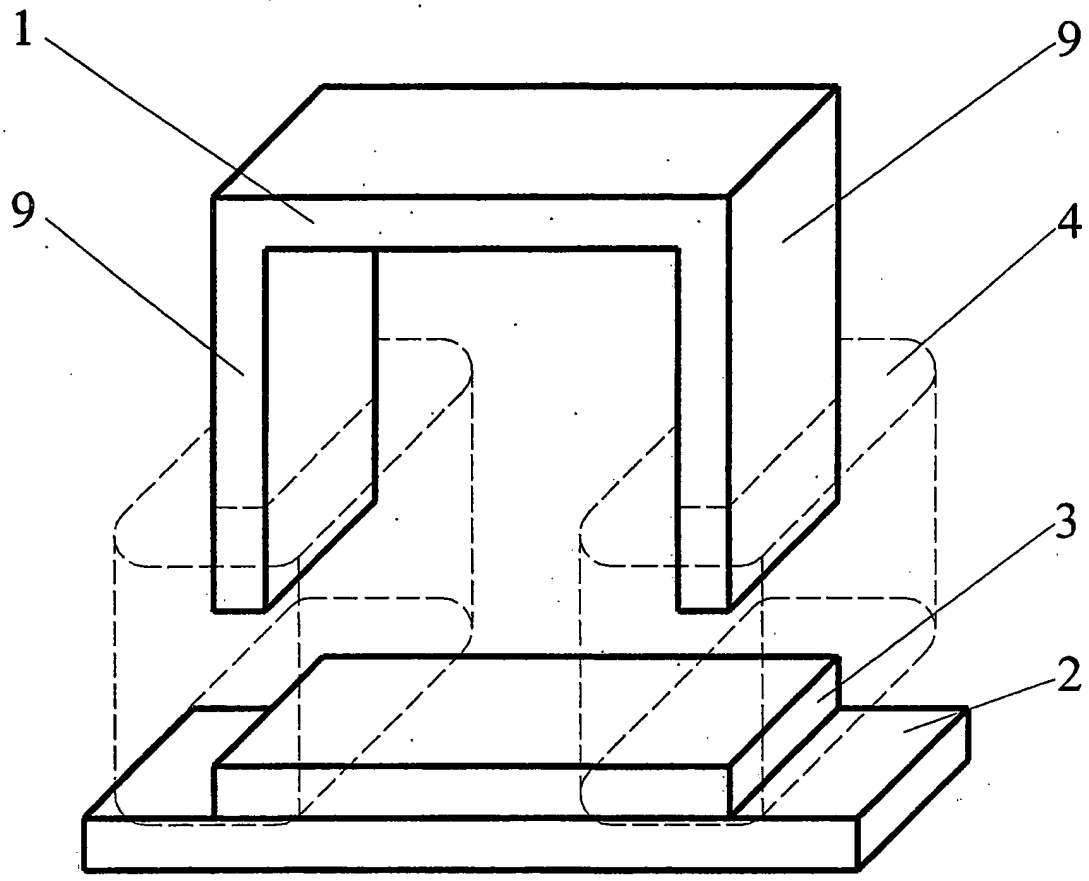

Fig.7

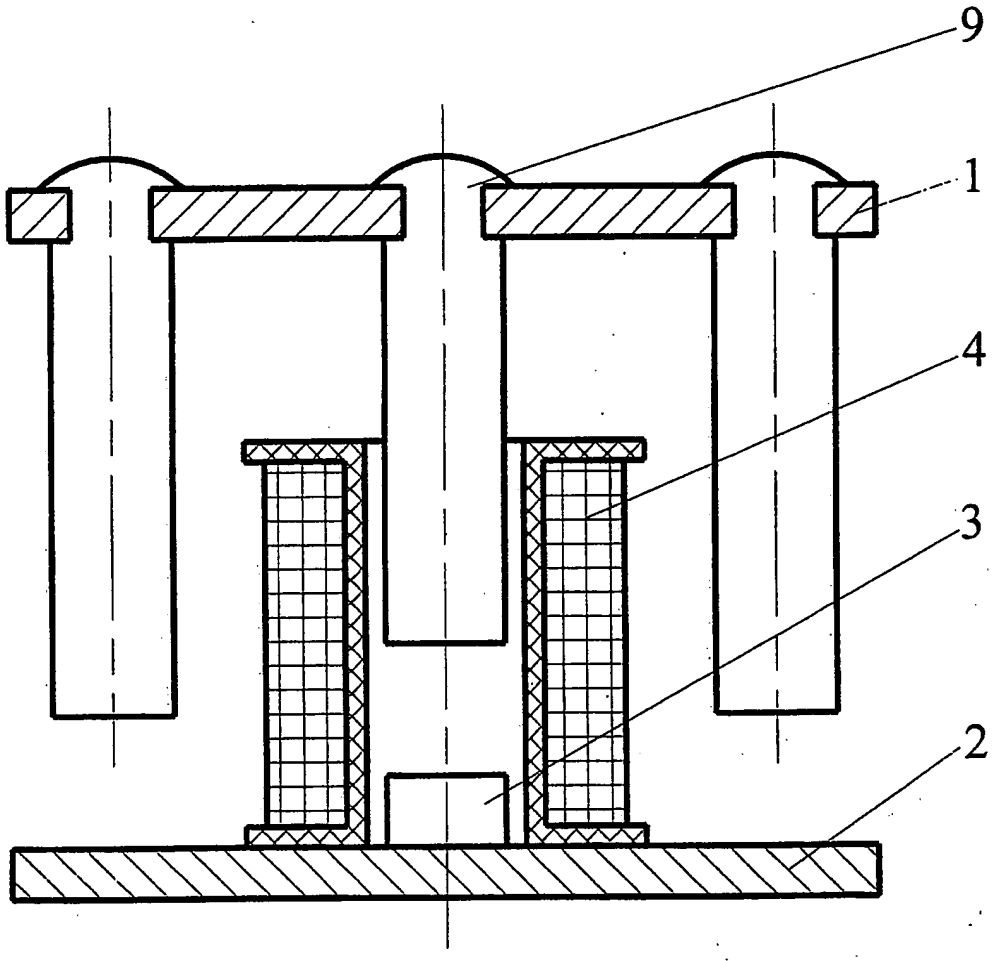

Fig. 8

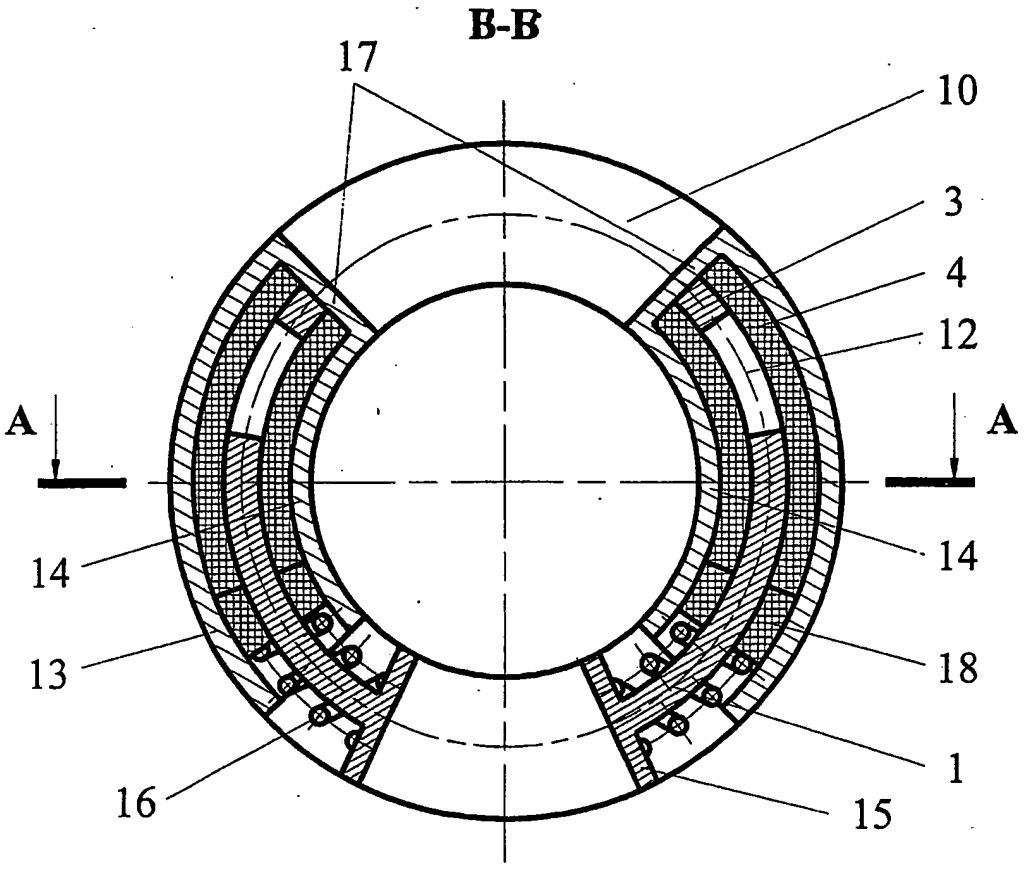

Fig.9

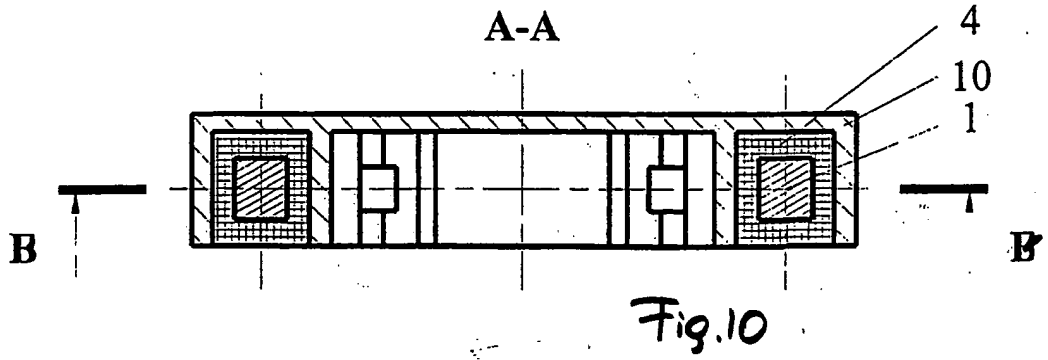

Fig.10

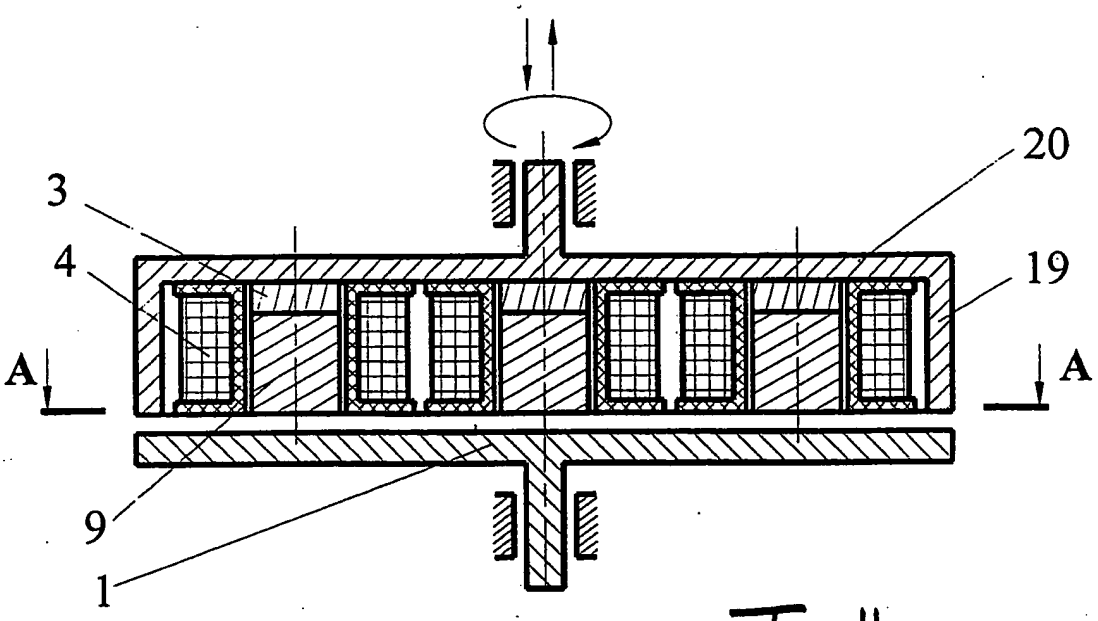

Fig. 11

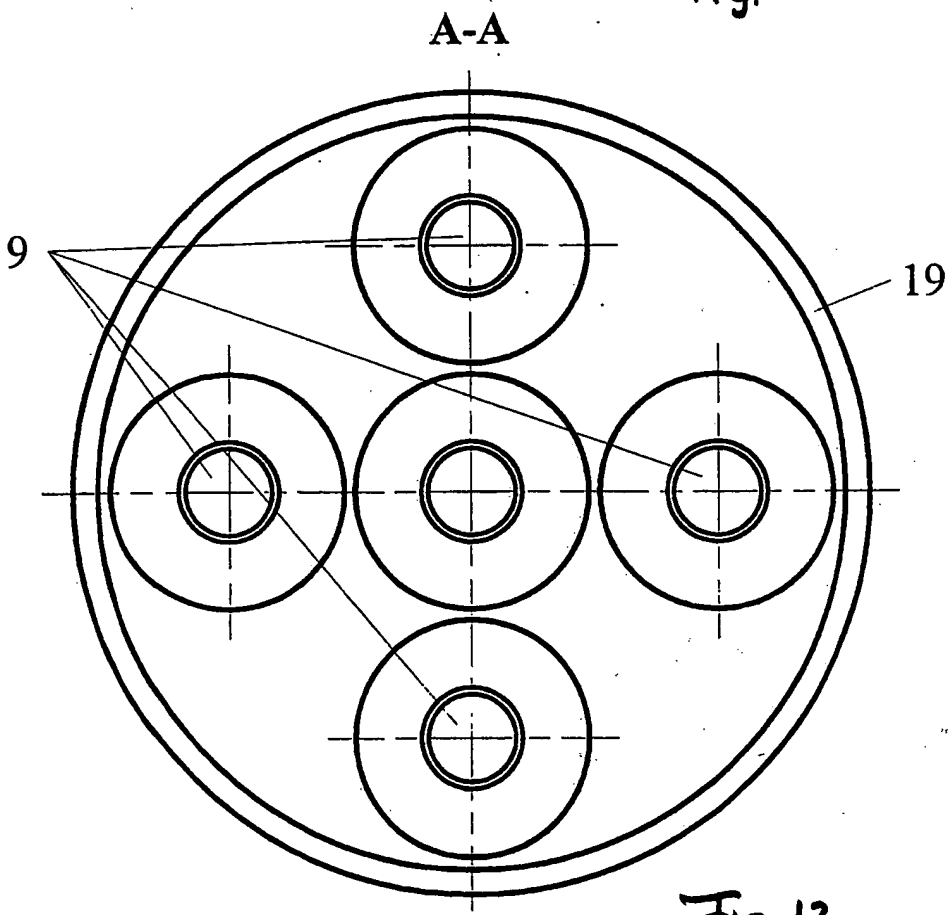

Fig. 12

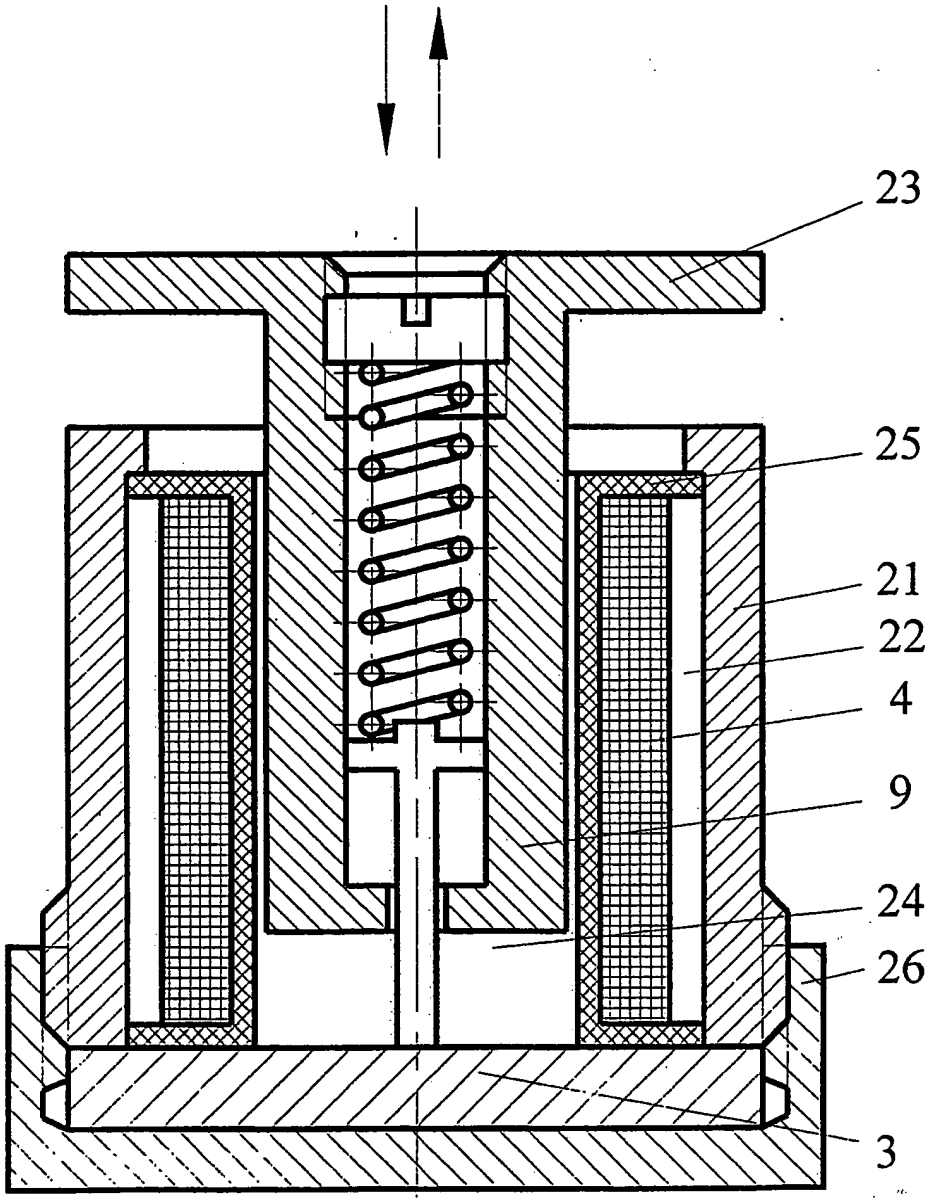

Fig. 13

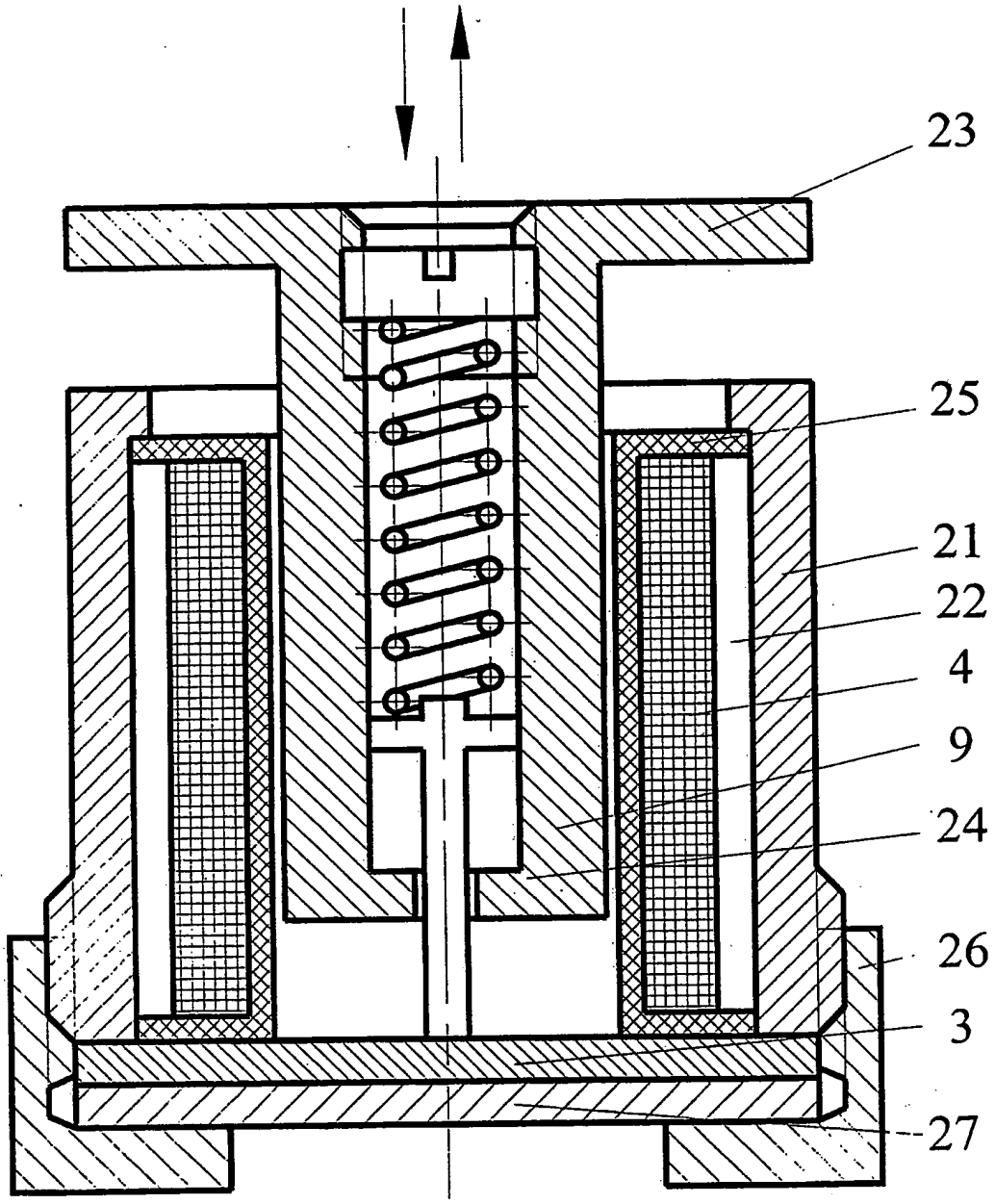

Fig. 14

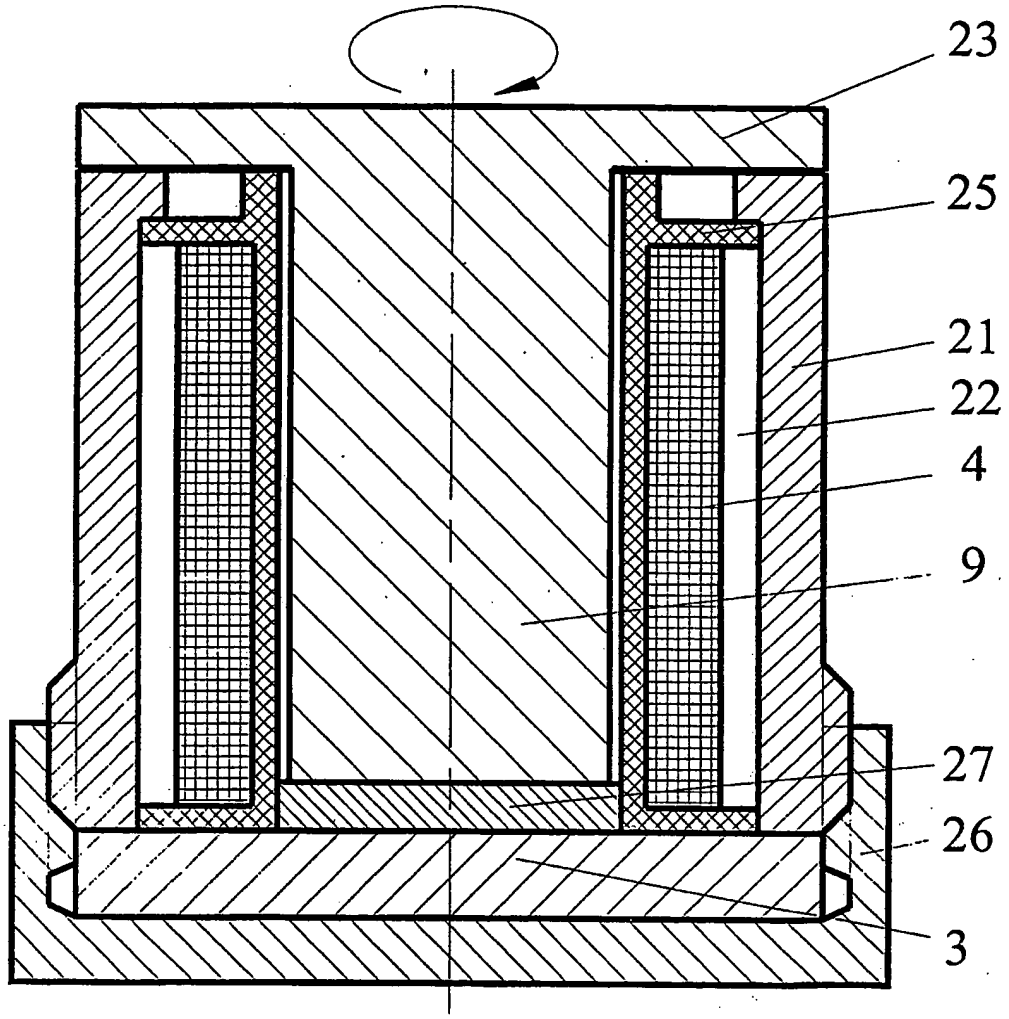

Fig. 15

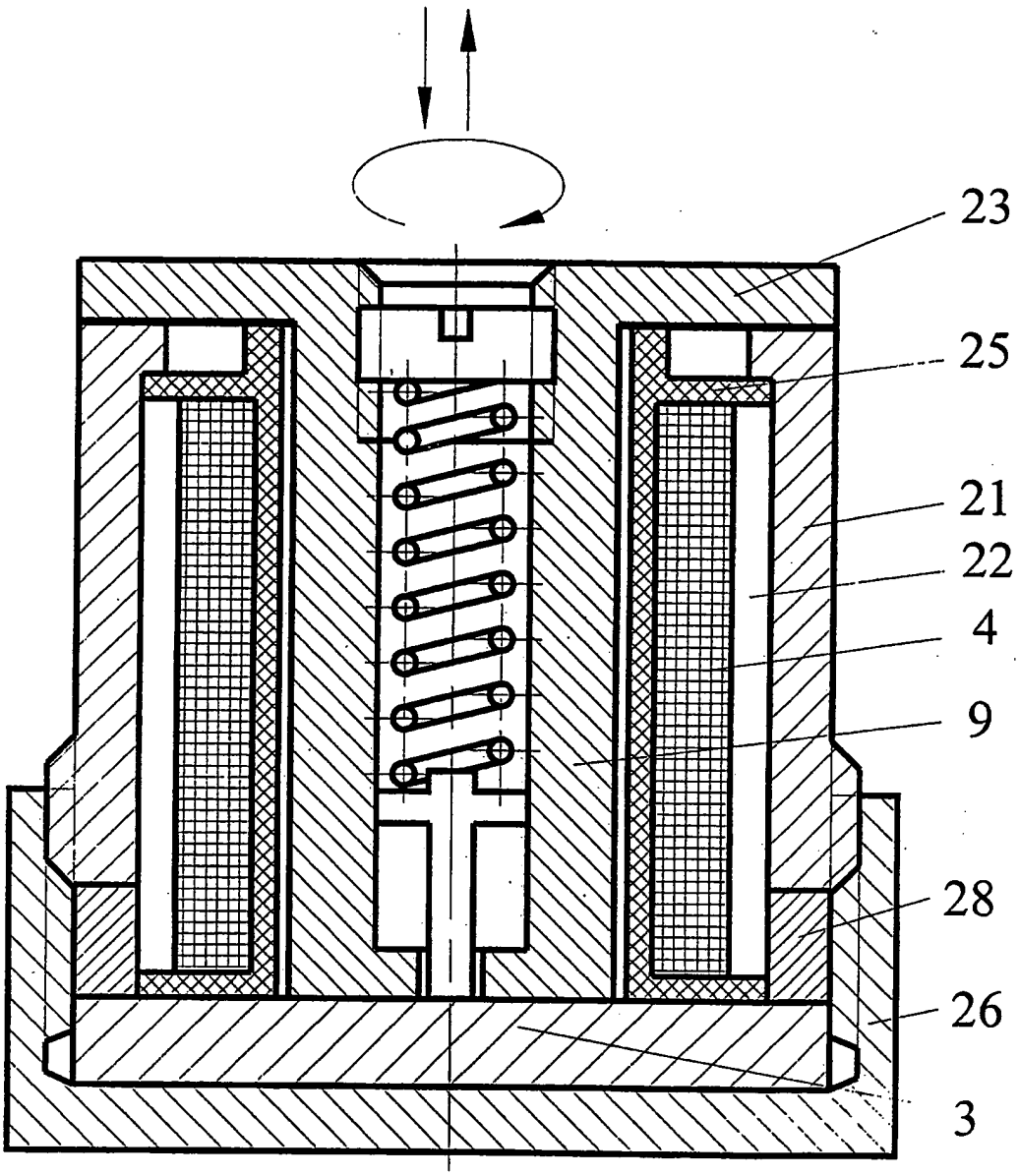

Fig. 16

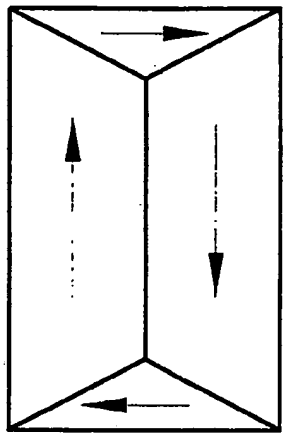

Fig. 17

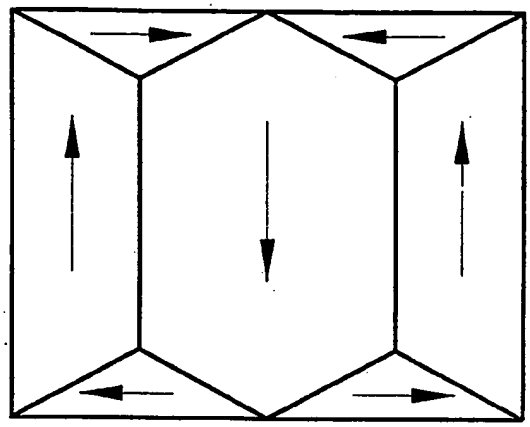

Fig. 18

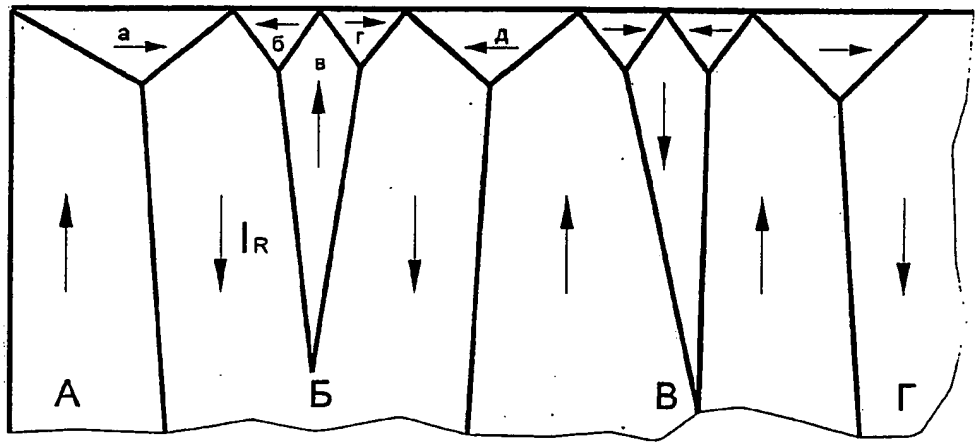

Fig. 19

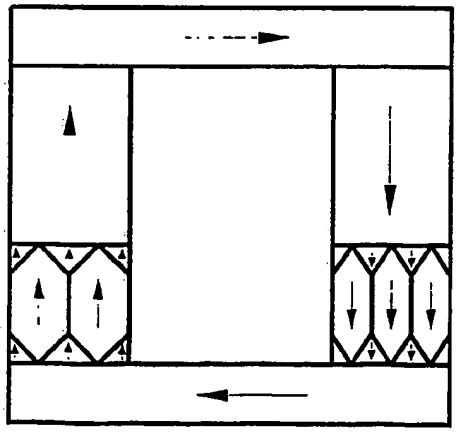

Fig. 20

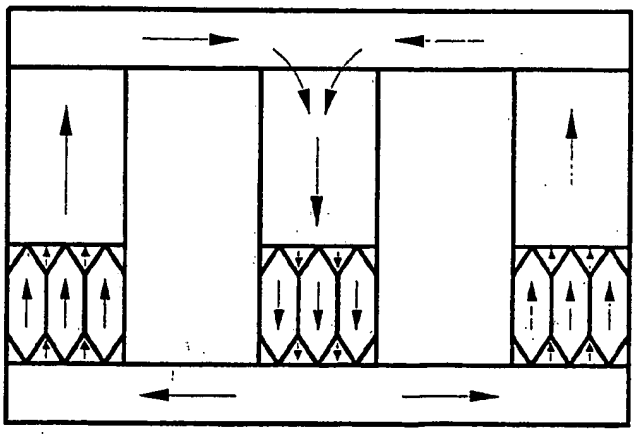

Fig. 21

Table 2

Important features and properties	Claimed solution	Analog 1	Analog 2	Analog 3
1. Minimization of air gap	+	-	-	+
2. Presence of closed magnetic circuit	+	-	-	+
3. Presence of composite magnetic guide	+	-	+	+
4. Absence of parallel branches (areas) of magnetic circuit, so that magnetic flux completely is transmitted through magnetically hard insert	+	-	-	+
5. $\alpha=0$ and $\cos\alpha=1$	+	-	-	+
6. Use of magnetically hard materials with minimal energy for remagntetization	+	-	-	+
7. Retaining "magnetic memory".	+	-	-	+
8. Ability to operate in circuits of alternating and direct current.	+	+	+	+
9. Present at least two stable energy independent conditions of magnetic guide of electromagnet	+	-	-	+
10. Possibility to make magnetic guide from inexpensive easy-to-machine non-alloyed steel of the type ST3, ST10, ST20, etc.	+	-	-	+

11. Significant, (by one order) increase of attractive and/or holding force F of electromagnet.	+	-	-	-
12. Significant (several times) reduction of metal consumption.	+	+	-	+
13. Significant improvement of mass-size parameters.	+	+	-	+
14. Increase of speed of action of magnetic systems.	+	+	-	+
15. Reduction of riveting of metal elements of magnetic guide and increase of wear resistance.	+	-	-	+
16. Significant increase of service life of contacts of executing devices.	+	-	-	+
17. Significant increase of holding force when compared with open non-composite magnetic guide.	+	-	-	-
18. Significant expansion of functional possibilities of electromagnet.	+	-	-	+
19. Significant economy of energy expenses.	+	+	+	+

Figure 22

Table 3

BRAND	Magnetic induction, B		Voltage, H_{CB}		$(BH)_{max}$		T_{work}	Ratio B/H in point $(BH)_{max}$ 10^{-3}
	MT1	Gs	kA/m	O_e	kJ/m^3	mGO_e	0°C	$T1*m*kA^{-1}$
LNG13	700	7000	48	600	12.7	1.6	540	14.6
LNG37	1200	12000	48	600	36.9	4.6	540	25.0
LNG40	1250	12500	48	600	39.8	5.0	540	26.0
LNG44	1250	12500	52	650	43.8	5.5	540	24.0
LNG52	1300	13000	56	700	51.7	6.5	540	23.2
LNGT28	1000	10000	56	720	27.9	3.5	.540	17.9
LNGT38	800	8000	110	1380	37.8	4.7	540	7.3
LNGT60	900	9000	110	1380	59.7	7.5	540	8.2
LNGT72	1050	10500	111	1400	71.6	9.0	540	9.5
LNGT36J	700	7000	139	1750	35.8	4.5	540	5.0

Figure 23

Table 4

Brand	Magnetic induction, B		Voltage, H_{CB}		$(BH)_{max}$		T_{work}	Ratio B/H in point $(BH)_{max}*10^{-3}$
	MT1	Gs	k A/m	O_e	kJ/m^3	MGO_e	0°C	$Tkm*kA^{-1}$
FLNG12	700	7000	40	500	11.9	1.5	540	17.5
FLNG14	500	5000	60	750	14.3	1.8	540	8.3
FLNG28	1050	10500	46	580	27.9	3.5	540	22.8
FLNG34	1120	11200	47	595	34.2	4.3	540	23.8
FLNG26	900	9000	56	700	26.3	3.3	540	16.1
FLNGT18	650	6500	80	1000	18.3	2.3	540	8.1
FLNGT31	780	7800	107	1340	31.0	3.9	540	7.3
FLNGT36	680	6800	135	135	35.8	4.5	540	5.0
FLNGT38	800	8000	123	123	38.2	4.8	540	6.5

Figure 24

Table 5

Brand	Ratio B/H in point $(BH)_{max}$ $*10^{-3}$, $T1*m*kA^{-1}$
UND4	12.0-16.0
UND8	13.0-16.0
UNTS	7.0-10.0
UNDK15	15.5-18.0
UNDK18	15.0-20.0
UNDK18C	22.0-28.0
UN13DK24C	30.0-33.0
UN13DK24	25.0-27.5
UN14DK24	20.0-22.0
UN15DK24	15.0-17.5
UN13DK25A	27.5-30.0
UN14DK25A	24.0-25.0
UN13DK25BA	26.5-27.5
UN14DK25BA	21.5-24.0
UN15DK25BA	16.5-21.5
UNDK34T5	8.0-11.0
UNDK35T5B	8.0-10.0
UNDK35T5	7.0-8.0
UNDK35T5BA	8.0-9.0
UNDK35T5AA	8.0-9.0
UNDK38T7	4.5-5.5
UNDK40T8	3.5-4.5
UNDK40T8AA	4.0-5.0

Fig. 25